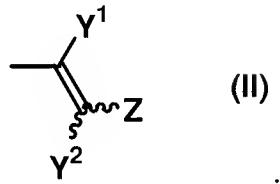


a.) Amendment to the Claims

Claim 1 (Cancelled).

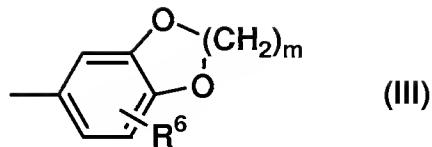
2. (Currently Amended) The ~~composition according to claim 1, method according to claim 9~~, wherein  $X^1$  and  $X^2$  each is an oxygen atom.

3. (Currently Amended) The ~~composition according to the claim 1 or 2, method according to claim 2 or 9~~, wherein  $R^4$  is represented by formula (II):



4. (Currently Amended) The ~~composition method~~ according to claim 3, wherein  $Y^1$  and  $Y^2$  are both hydrogen atoms.

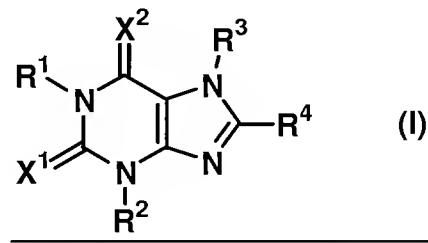
5. (Currently Amended) The ~~composition method~~ according to claim 3, wherein  $Z$  is substituted or unsubstituted aryl or a group represented by formula (III):



(wherein  $\text{R}^6$  represents a hydrogen atom, hydroxy, lower alkyl, lower alkoxy, halogen, nitro or amino; and  $m$  represents an integer of 1 to 3).

Claims 6-8 (Cancelled).

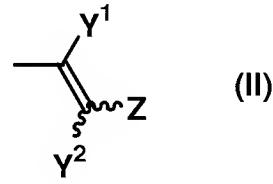
9. (Currently Amended) ~~The method according to any one of claims 6 to 8, wherein the higher brain dysfunction is~~ A method for preventing and/or treating an impairment of higher brain function selected from the group consisting of memory, thinking, recognition, action and learning, comprising administering to a patient in need thereof an effective amount of a xanthine derivative represented by formula (I)



wherein

$\text{R}^1$ ,  $\text{R}^2$  and  $\text{R}^3$  independently represent a hydrogen atom, lower alkyl, lower alkenyl, or lower alkynyl;

R<sup>4</sup> represents cycloalkyl, -(CH<sub>2</sub>)<sub>n</sub>-R<sup>5</sup> (wherein R<sup>5</sup> represents a substituted or unsubstituted aryl, or a substituted or unsubstituted heterocyclic group; and n represents an integer of 0 to 4) or a group represented by formula (II):



wherein Y<sup>1</sup> and Y<sup>2</sup> independently represent a hydrogen atom, halogen or lower alkyl; and Z represents substituted or unsubstituted aryl, or a substituted or unsubstituted heterocyclic group); and

X<sup>1</sup> and X<sup>2</sup> independently represent an oxygen atom or a sulfur atom, or a pharmaceutically acceptable salt thereof.

10. (Currently Amended) The method according to ~~any one of claims 6 to 8, claim 9~~, wherein the ~~higher brain dysfunction~~ impairment of higher brain function is selected from the group consisting of agnosia, amnesia and apraxia.

11. (Currently Amended) The method according to ~~any one of claims 6 to 8, claim 9~~, wherein the ~~higher brain dysfunction~~ impairment of higher brain function is a memory impairment.

12. (Currently Amended) The method according to ~~any one of claims 6 to 8, claim 9~~, wherein the ~~higher brain dysfunction impairment of higher brain function~~ is a learning impairment.

Claims 13-15 (Cancelled).

16. (New) The method according to any one of claims 9 to 12, wherein the xanthine derivative is (E)-8-(3,4-dimethoxystyryl)-1,3-diethyl-7-methylxanthine.